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ABSTRACT

This paper reports on the status of educational equity and equality in Thailand. Empirical and statistical indicators are presented for preschool, elementary, secondary, and higher education. Educational attainment at each of these levels is compared by the sex, socioeconomic status (based on father's occupation), and geographic origins of students. The relationship between educational equity/equality and human rights is discussed briefly. (APM)

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EMPIRICAL INDICATORS OF EDUCATIONAL EQUITY

A THAI CASE STUDY

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EMPIRICAL INDICATORS OF EDUCATIONAL EQUITY: A THAI CASE STUDY

> "In Third World eyes, then, inequality was the burning issue. There could not possibly be the 'truce' on inequality' which some thinkers have observed in the more affluent societies of the West."
>
> C. G. Weeramantry, 1976: 10

> "Yet if practitioners of professional social inquiry aspire to authoritativeness, it is in this modest activity (reporting) that they will most frequently succeed. Comparing to the task of achieving scientific generalization, it is easy work and surer of result. And its successes, especially when set beside the continuing inability of academic social scientists to develop more than a few scattered authoritative scientific generalizations, suggest that it may represent a contribution by practitioners of professional social inquiry to social problem solving more significant than what they have achieved or can ever achieve through the pursuit of authoritative scientific generalization."
>
> C. Lindblom and D. Cohen, 1979: 83

Consistent with the Lindblom and Cohen statement above, I focus in this paper on social indicator reporting and not the development of scientific generalizations. The substantive issue of concern is educational equity and equality, a major issue both here and abroad, and an important dimension in any human rights assessment. The recent Brandt Commission on North-South relations, for example, stresses educational opportunity as a fundamental component of basic needs (Brandt et al., 1980: 16). Thus, my basic objective is to present an in-depth report on the status of educational equity and equality in Thailand. It is hoped that this indicator analysis can serve as an important element in the overall assessment of the human rights and basic needs situation in Thailand.

Too often the terms equity and equality are used interchangeably (Thurow, 1975: 22). This is unfortunate and leads to much confusion. In this paper, the two concepts are explicitly distinguished. As used here, equity is considered to be a normative concept connoting fairness, and does not necessarily imply equality of results nor inputs. In fact, inequality of inputs may be fundamentally essential to obtain educational equity. Perfect equity, in terms of equal chances regardless of socioeconomic background and other ascriptive characteristics, could be potentially consistent with signficant income and other outcome disparities. With respect to equality, as used here, it refers specifically and strictly to degree of quantitative dispersion for a particular empirical indicator, with zero dispersion indicating perfect equality. Empirical indicators presented here are specifically identified as measuring either equity or equality.

Empirical Indicators of Educational Equity and Equality: A Conceptual Typology

Though the indicators developed here are specifically used with reference to the status of educational equity and equality in Thailand, it is hoped that the same or similar indicators may used in other nations as well. The basic typology of indicators is shown in Table 1.

TABLE 1

A Conceptual Typology of Equity and Equality

Type of Indicator	Focus of Concern: Equity (E)	Focus of Concern: Equality (e)
Descriptive	DE	De
Analytical	AE	Ae

Some examples of actual indicators may be helpful to clarify this typology. The variance in expenditures per head for elementary schooling by state or province would be a descriptive indicator of degree of equality and would be located in cell De of Table 1.

In contrast, the zero-order correlation between socioeconomic background and educational attainment would be an analytical indicator of equity (AE). The percentage of women gaining admission to higher education would be a descriptive indicator of equality. Descriptive indicators are in statistical terms simple means, proportions, or coefficients of variation, while analytical indicators are normally bivariate Pearson or rank correlations. For example, the rank order correlation between the per-capita wealth of a state or province and its per-capita expenditures on elementary schooling would be an analytical indicator of equity. Normally a coefficient of zero implies perfect equity or equality, while a coefficient of one implies perfect inequity or inequality.

Framework of Analysis

Though my own orientation in this paper is not theoretical, the data and analysis presented here are certainly relevant to scholars concerned with comparing societies systematically with regard to their equity-equality status, in order to evaluate alternative theories of development. Two orientations underly the basic analysis of this paper, 1) practical, and 2) methodological. From a practical substantive point of view, it is essential to have meaningful social indicators of equity and equality, in order to assess the effectiveness of governmental educational programs, policies, and reforms. Also from a methodological perspective, it is important to triangulate, that is, to use multiple methods and data sources (Denzin, 1970). Reliance on a single indicator of inequity or inequality would be hazardous. Choice of a particular statistical measure may significantly influence findings (see Haney, 1977). Thus, in this paper there is an attempt to postulate a comprehensive set of empirical indicators encompassing a number of alternative theoretical perspectives, social science disciplines, data sources, statistical measures, and levels of aggregation. With an emphasis on triangulation, it should be possible to develop an in-depth understanding of a society's educational equity structure. The indicators defined here are then used to assess the actual extent of educational equity and equality in Thailand.

Statistical Indicators of Educational Equity and Equality

There are a number of possible statistical indicators of equity and equality (see Odden, 1979; Allison, 1978; Haney, 1977; and Sen, 1973). Odden (p. 96) in his discussion of equity in school finance presents measures such as the McLoone Index, the Theil measure, Atkinson's Index, and the Federal range ratio. Allsion focusing instead on statistical inequality presents an excellent review of relevant measures, namely, the standard deviation, the Gini coefficient, coefficient of variation, relative mean deviation or Schutz's coefficient, the Theil Index, and the variance of the logarithm. Allison rejects the relative mean deviation and the variance of the logarithm since they fail to satisfy the principle of transfers. The standard deviation or variance is rejected since it fails to meet the crucially important criterion of scale invariance, which makes possible comparing various dimensions of equality. In this sense, the coefficient of variation is similar to a simple correlation coefficient which is also scale invariant. In this paper there is an emphasis on using the coefficient of variation as a measure of equality, since many of the statistical indicators used are measured as ratio scales, and since it is a measure easily understood by policymakers and administrators.

Other measures of equality and equity used are as follows:

1) The selectivity index. This measure shows the degree of correspondence between an actual proportion and an ideal proportion, based upon the criterion of perfect equity. An example may be helpful. The Northeastern region of Thailand has 33% of the nation's population. Currently 7% of Thailand's university students come from this region. Thus, this geographic area has a selectivity index of only .21. In contrast, the rich province of Bangkok has only 8% of the country's population, but 48% of the country's university students are from this primate city. Thus, this province has a selectivity

index of 6.0 (48÷8) indicating far greater than normal opportunities for individuals from this province.

2) The Pearson correlation coefficient (zero-order, r). This shows the degree of relationship between two variables. For example, in a society with perfect educational equity, there should be no correlation between individuals' socioeconomic backgrounds and their educational attainments.
3) Simple proportion, p. This is useful, for example, in measuring sex equality, such as the proportion of females among university students.

Standardizing Measures of Inequity and Inequality-- The Discrepancy Ratio

The various empirical indicators proposed to assess the extent of educational equity and equality unfortunately involve varying measurement units. To standardize these various units, I propose a new concept which I term the discrepancy ratio, to measure extent of equality-inequality along a continuum of 0 to 1. A value of 0 indicates no discrepancy and, therefore, perfect equality and/or equity. A value of one suggests maximal discrepancy and, thus, extreme inequality or ineqity. Some indicators are already in the form 0-1 such as the Gini and Pearson correlation coefficients. The coefficient of variation, V, mathematically can be transformed to a 0-1 scale by the simple formula, $V = V/V + 1$. Simple proportions frequently must also be standardized. For example, suppose that in a given society 20% of the university students are female. This reflects a discrepancy of .30 from the ideal proportion of .50. The range of this indicator is, however, only 0-.50. Therefore, the ideal proportion minus the actual proportion must be multiplied by two to become a discrepancy ratio.

The purpose of standardizing these measures of inequality is not to combine them into one overall index of inequality or inequity. That would not be justified or legitimate for two major reasons:

1) Though the measures have been standardized to a 0-1 continuum, they are not mathematically equivalent. A Gini coefficient of .75 is three times one of .25. Similarly a Pearson correlation of .75 is three times one of .25. However, it is clear that this ratio of three may not have mathematical equivalence with respect to different coefficients or measures.

2) Two competing paradigms dominate thinking about equality and equity, the equality of results versus equality of opportunity perspective. In this paper, indicators reflecting both perspectives are defined and utilized. To combine indicators of the two indicators into a single index would be highly inappropriate.

The purpose in standardizing these measures, is to facilitate constructing a common inequality/equality profile for a particular society. This profile summarizes the various empirical indicators in terms of the common standard, the discrepancy ratio (see Table 7). Such a summary is presented for its heuristic value and should not be interpreted in any strict mathematical sense. The major use of such summaries is to trace shifts in indicators over time. Such summaries for various countries might also be useful to those wishing to compare human rights conditions in different parts of the world. Such profiles may also be helpful in highlighting the relative seriousness of inequality/inequity among different levels or types of education. The indicators defined are now applied to the case of Thailand.

Equity of Pre-school Education in Thailand

In Thailand, pre-school education is not yet universally provided by the government. The pre-school education which does exist is offered by 11 different types of organizations. Thailand has a total of 4,487 preschool institutions (NEC, 1979b:15). Of these, the largest percentage (33%) are under the Provincial Administrative Organization and, thus, administered by local governments. The second largest percentage (30%) are private schools. The Ministry of Education directly runs only 1.7% of these schools primarily for demonstration and experimental purposes.

Given such a structure, education at this level is not likely to be equitable. The empirical indicators available show that this is indeed the case. Table 2 provides data on access to pre-school education by family background. Children of government officials are overrepresented by a factor of 5.5, while children of farmers are severely underrepresented. Were it not for the government pre-school services provided by the Provincial Administrative Organizations, the situation would be even far more inequitable. The findings in Table 2 are confirmed by a major Coleman type study of school achievement in Thailand. This study (NEC, 1977a: 84) finds a strong .44 correlation between socioeconomic background and access to pre-school education.

Research by Bloom and others suggests that by age three or four the child has already been significantly affected by the environmental deficiencies of his early family life (Selowsky, 1980:106; Weikart and Lambie, 1970; and Kagen, 1970). Thus, the lack of equity with regard to access to pre-school education in Thailand should be an issue of major concern.

Equity-Equality of Elementary School Education

In Thailand, elementary education is universally provided free by the government. Thus, nearly all children, regardless of socioeconomic or geographic background, have access to a primary school, and this represents a major accomplishment of the Royal Thai Government. Nevertheless, inequities and inequalities do exist, particularly with regard to the uneven quality of primary education in various regions of the country. Table 3 presents summary data from a major national assessment of primary school achievement and shows significant disparities among Thailand's major regions (NEC, 1976:6). Children in Bangkok score on the average twice as high as children from the poorer, remote Northeast. Also discouraging from an equity perspective, is a high rank order correlation of .76 between provinces' wealth per-capita and extent of opportunities to continue to upper primary

TABLE 2

Access to Preschool Education by Family Background

Occupation of Father	Proportion of Nation's Population	Proportion of Preschool Fathers	Selectivity Index
Farmer	78.4%	23.6%	.30
Merchant	6.8%	16.8%	2.47
Government Official	5.2%	28.7%	5.52
Laborer/Craftsman	9.6%	30.9%	3.22

Source: NEC, 1979b: 60-61

TABLE 3

Mean Scores on Thai and Arithmetic Achievement Test by Region

Region	Average Score
Bangkok	63.4
Central	48.1
South	47.3
North	41.7
Northeast	33.3

Source: NEC, 1977a: 25

schooling (NEC, 1976:49). The various indicators presented here for the most part reflect the past equity condition of Thai elementary education. Recent changes in budgeting approaches which emphasize greater equity (see Rung et al., 1980) have resulted in significantly greater equality among the various Thai provinces in terms of basic educational inputs. The disparities vividly documented by Kamol et al., (1978) are being reduced by the new Minister of Education, Dr. Sippanondha Ketudat, and his staff who are implementing major aspects of the Thai Educational Reform (1974).

The Thai government has also achieved rather remarkable success in providing primary schooling to females. 48% of students in lower primary grades are females and 46% of students in the upper primary grades are female (Malliga, 1978). Few developing countries have attained such success in providing educational opportunities to rural girls.

Equity-Equality of Secondary School Education

Since the Thai government does not provide free universal secondary education, greater disparities are to be expected at this level of education. Various empirical indicators suggest that this is certainly the case. Discrepancy ratios for indicators related to secondary education are generally higher than those for primary schooling. Table 4, for example, shows access to lower secondary education by family background. Among first year secondary students, children of farmers are underrepresented by a factor of approximately three, whereas children of government officials and white collar workers are overrepresented by a factor of about five. Also discouraging from an equity perspective, are rather high correlations (.73 and .74) between the wealth of Thai provinces and access to lower and upper secondary schools. Confirming the above results, Supang in a detailed study (NEC, 1979a:71) of continuation versus non-continuation to secondary schooling, finds socioeconomic background to have a discriminate coefficient of .31. Thus, Thai secondary

TABLE 4

Access to Lower Secondary Education by Family Background*

Father's Occupation	Proportion of Population	Proportion of Fathers of First Year Secondary Students	Selectivity Index
High level occupation	2%	9%	4.50
Businessman, industrialist	1%	1%	1.00
Merchant, shopowner	9%	30%	3.33
Clerk, civil servant	6%	29%	4.83
Farmer	70%	26%	0.37
Laborer	12%	5%	0.42

Source: NEC, 1978: 28

*These data refer only to provinces in the Central region of Thailand. The same basic patterns prevail in other regions of the country as well.

schooling seems to be characterized by serious inequities primarily related to the influence of socioeconomic background and geographic origins on access to this level of education. To deal with such inequities, Thailand has introduced a major reform of its examination system (see Kamol, 1977). It will be interesting to see how this reform may affect in the future the various indicators of equity at the secondary school level.

Equity-Equality of Higher Education

In Thailand, the public sector is primarily responsible for higher education. Admission to Thailand's major universities is based on performance on a highly competitive joint entrance examination (Kraft, 1968). This examination is basically an achievement test, and, thus, favors students from higher socioeconomic backgrounds and high quality secondary schools. Table 5 shows the relationship between success on this examination and family background as well as geographic origins. These data clearly show that those of farm backgrounds and those from Thailand's North and Northeast are seriously underrepresented among those successful in passing the higher education entrance examination. Since university fees in Thailand are low and do not nearly reflect actual costs of instruction, the equity situation is particularly acute.

The Thai government has addressed this equity problem by primarily providing alternative forms of higher education for those unable to compete successfully in the higher education entrance examination. For the wealthy, there is the option of study abroad in the United States or in neighboring Southeast Asian countries such as the Philippines (Amara, 1973:107). The Thai government is liberal in permitting foreign exchange to be exported for such purposes. For those without the means to study abroad, there are a number of other options as an alternative to the selective universities. As in many other countries, teacher training colleges tend to provide opportunities for those of lower socioeconomic background (cf. Kelsall et al., 1972). Also in 1970, Thailand established an open admissions university (Amara, 1973; Danskin, 1979).

TABLE 5

Success on Higher Education Entrance Examination (HEEE) by Family Background and Georgraphic Origins

Occupation of Father	Proportion of Population	Proportion of Those Successful on HEEE	Selectivity Index
Farmer	78.4%	6%	.08
Government official	5.2%	21%	4.04
Merchant, self-employed	6.8%	53%	7.79
Employee	9.6%	13%	1.35

Students' Geographic Origins	Proportion of Population	Proportion of Those Successful on HEEE	Selectivity Index
Northeast	33%	7%	.21
North	23%	11%	.48
South	13%	13%	1.00
Central	23%	21%	.91
Bangkok	8%	48%	6.00

Source: NEC, 1977b: 169, 173

More recently Thailand has established an open-distance university to provide opportunity for the thousands of secondary graduates unable to enter Thailand's selective universities. It would seem that these alternatives to the selective universities tend to serve the "cooling-out" function noted long ago by Clark (1960), particularly with regard to junior colleges in the United States.

With respect to equity in higher education, females would at first glance appear to have relatively good opportunities, since 43% of those passing the joint higher education entrance examination (JHEEE) are women. There is, however, a subtle interaction effect which is shown by indicator, h_2, in Table 6, which is a summary table of indicators. Those women passing the JHEEE are generally of higher socioeconomic background. Among those of farm background passing the examination, men outnumber women more than two to one. Thus, Thai women of rural background have a particularly limited chance of ever attending a selective Thai university.

Summary

A summary of empirical indicators of educational equity and equality is presented in Table 6. The indicators are grouped by level of education. Upper case letters designate indicators of equity-inequity, whereas lower case letters designate indicators of equality-inequality.

Table 7 presents a summary of the discrepancy ratio data. Overall, the largest number of indicators fall in the .25-.49 range, suggesting moderate levels of inequity-inequality. Of 21 empirical indicators used, only one is above .75, suggesting severe inequity. Actually, 8 of the 21 indicators show relatively low degrees of inequity-inequality, clearly a positive element in any assessment of human rights conditions in Thailand. From Table 7, it is rather clear that inequity and inequality at the elementary school level is of considerably lesser magnitude than at other levels of education.

TABLE 6

Empirical Indicators of Educational Equity and Equality in Thailand

Empirical Indicators	Type of Indicator	Level of Aggregation	Statistical Measure	Value of Indicator	Discrepancy Ratio	Year of Data	Source of Data
Level of Education							
Preschool:							
P_1* Relationship between SES and access to preschool	A**	I***	Point biseriel correlation	.44	.44	1973	NEC,1977a:84
P_2 Relationahip between SES and access to preschool	A	I	Coefficient of variation (CV) of selectivity index (SI)	.65	.39	1977	NEC,1979b:60-61
Primary School:							
E_3 Relationship between SES and achievement	A	I	Pearson correlation	.43	.43	1973	NEC,1977a:83
e_4 Degree of equality among 5 regions on achievement test	D	R	CV	.45	.31	1973	NEC,1976:6
E_5 Relationship between provincial wealth and opportunities for upper primary schooling	A	P	Spearman rank correlation	.76	.76	1971/72	Farner, 1972; NEC. 1976:49

Notes: *Uppercase letters refer to equity measures, while lowercase letters refer to equality measures.

**A refers to an analytical indicator, while D refers to a descriptive one.

***I refers to individual level data; R, regional level data; and P, provincial level data.

TABEL 6 CONTINUED

Empirical Indicators	Type of Indicator	Level of Aggregation	Statistical Measure	Value of Indicator	Discrepancy Ratio	Year of Data	Source of Data
e_6 Degree of equality of capital expenditures per pupil by 5 major regions	D	R	CV	.22	.18	1973	NEC,1976:47
e_7 Proportion of females in lower primary schools	D	I	Proportion	.48	.04	1977	Malliga,1978
e_8 Proportion of females in upper primary schools	D	I	Proportion	.46	.08	1977	Malliga,1978
e_9 Degree of equality among provinces in proportion of students continuing from K-4 to K-5	D	P	CV	.30	.23	1977	NEC
e_{10} Degree of equality among provinces in % enrollment in rural schools	D	P	CV	.08	.07	1975	Kamol,et al., 1978:116-117.
e_{11} Degree of equality among provinces in pupil/teacher ratio in primary education	D	P	CV	.14	.12	1975	Kamol et al. 1978:116-117
e_{12} Degree of equality among provinces in grant per pupil in primary education	D	P	CV	.20	.17	1975	Ibid.

TABLE 6 CONTINUED

Empirical Indicators	Type of Indicator	Level of Aggregation	Statistical Measure	Value of Indicator	Discrepancy Ratio	Year of Data	Source of Data
Secondary:							
S_{13} Relationahip between SES and access to lower secondary	A	I	CV of SI	.41	.29	1977	NEC,1978:29
S_{14} Relationship between SES and access to lower secondary	A	I	Discriminant coefficient	.31	.31	1979	NEC,1979a:71
S_{15} Relationship between wealth of province and access to upper secondary	A	P	Pearson correlation	.73	.73	1976	Kamol, et al., 1978:137
s_{16} Degree of equality among provinces in access to lower secondary	D	P	CV	.43	.30	1976	Ibid.:36
s_{17} Degree of equality among provinces in access to upper secondary	D	P	CV	.74	.42	1976	Ibid.
Higher Education:							
h_{18} Proportion of those admitted to Thai selective universities who are female	D	I	Proportion	.43	.14	1976-1977	OUA,1979:25
H_{19} Ratio of women to men among those of farm background admitted to selective universities	A	I	Proportion	.42	.58	1976-1977	OUA,1979:37

TABLE 6 CONTINUED

Empirical Indicators	Type of Indicator	Level of Aggregation	Statistical Measure	Value of Indicator	Discrepancy Ratio	Year of Data	Source of Data
H_{20} Relationship between SES and access to higher education	A	I	CV of SI	.89	.47	1976	NEC,1977b:173
H_{21} Relationship between geographic origins and access to higher education	A	R	CV of SI	1.26	.56	1976	NEC 77b:173

TABLE 7

SUMMARY OF DISCREPANCY RATIO DATA

Continuum	Discrepancy Ratio	Number of Indicators by Level of Education				
		Preschool	Primary	Secondary	Higher	Total
Inequity-Inequality	0-.24	0	7	0	1	8
↑	.25-.49	2	2	4	1	9
↕	.50-.74	0	0	1	2	3
↓	.75-1.00	0	1	0	0	1
Equity-Equality						

It is hoped that the data above provide a detailed and in-depth view of the status of educational equity and equality in Thailand. The major limitations of these data is that they are cross-sectional and do not show trends over time. It would be useful to look at these same indicators for the early 80s to see if inequities and inequalities have been declining as a result of various government programs and interventions to reduce disparities and inequities.

The availability of extensive and detailed data on educational inequity and inequality is in itself highly significant and is certainly reflective of an open intellectual milieu in Thailand. These data also reflect much serious and significant policy research on equity issues. I would speculate that there are few Third World countries, even socialist ones, with so many direct studies of inequity-equity issues. But not only has the Thai government authorized and supported serious studies of equity issues, it is also implementing numerous programs to reduce disparities and inequities. Among such programs and interventions particularly noteworthy are 1) a new system of educational administration involving a greater deconcentration of power and authority, 2) a nation-wide school mapping effort, 3) new budgeting procedures for allocating educational resources more equitably among provinces, 4) the reform of the school examination system, and 5) the establishment of a new open-distance learning university.

Educational equity is certainly an important element in any human rights assessment. While the empirical indicators presented in this paper reflect serious and significant inequities and inequalities, particularly at the pre-school, secondary, and higher educational levels, the Thai government is currently actively addressing such issues, based on an impressive empirical data base. The openness with which the government has supported research in this important area of educational equity is encouraging.

In economics, there exist a well defined set of leading indicators. Given the absence of any general theory of education, no such set of indicators exist in the education area. Nevertheless, educational

policymakers, administrators, and planners do need systematic data on educational equity and equality. The empirical indicators defined and used in this paper are only suggestive and in no way definitive. It is hoped that they may stimulate further research on indicators of educational equity and equality. Empirical indicators of this type are critically necessary for governments everywhere to enable them to chart their progress toward greater equity, now increasingly recognized as the fundamental objective of development oriented toward human rights and basic needs.

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